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<223> Deduced Rpi-blb2 protein sequence

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Arg Leu Lys Asn Glu Glu Asp Gln Lys Ala Val Asp Val Asp Leu Ile
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20

Glu Ser Leu Lys Leu Lys Leu Thr Phe Ile Cys Thr Tyr Val Gln Leu
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Ser Tyr Ser Asp Leu Glu Lys Phe Glu Asp Ile Met Thr Arg Lys Arg
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Gln Glu Val Glu Asn Leu Leu Gln Pro Ile Leu Asp Asp Asp Gly Lys
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Asp Cys Ile Ser Leu Tyr His Arg Ser Lys Ser Asp Ala Thr Met Met
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Asp Glu Gln Leu Gly Phe Leu Leu Leu Asn Leu Ser His Leu Ser Lys
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His Arg Ala Glu Lys Met Phe Pro Gly Val Thr Gln Tyr Glu Val Leu
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Gln Asn Val Cys Gly Asn Ile Arg Asp Phe His Gly Leu Ile Val Asn
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Cys Cys Ile Lys His Glu Met Val Glu Asn Val Leu Ser Leu Phe Gln
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Leu Met Ala Glu Arg Val Gly Arg Phe Leu Trp Glu Asp Gln Ala Asp
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Glu Asp Ser Gln Leu Ser Glu Leu Asp Glu Asp Asp Gln Asn Asp Lys
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 The initiation codon (ATG position 1546-1548) and the termination
 codon (TAG position 5433-5435)
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 The initiation codon (ATG position 1546-1548) and the termination
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55 <223> Sequence of 9949 bp Sau3AI genomic DNA fragment of S. bulbocastanum 2002 BAC BlbSP39 present in pSP39-20. The genomic fragment harbours the Rpi-blb2 gene including natural elements necessary for expression. Initiation codon (ATG position 1413-1415), the termination codon (TAG position 5300-5303)

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 <222> (1413)..(1415)

5 <223> Sequence of 9949 bp Sau3AI genomic DNA fragment of *S. bulbocastan*
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 nation codon (TAG position 5300-5303)

10 <220>
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15 <223> Sequence of 9949 bp Sau3AI genomic DNA fragment of *S. bulbocastan*
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 expression. Initiation codon (ATG position 1413-1415), the termi
 20 nation codon (TAG position 5300-5303)

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29

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	1 5 10 15	
	ttt tct gct ctt agc aag gac att gcc gat gtt ctg gtt ttc cta gag	96
45	Phe Ser Ala Leu Ser Lys Asp Ile Ala Asp Val Leu Val Phe Leu Glu	
	20 25 30	
	aat gag gaa aat caa aaa gct ctt gac aaa gat caa gtt gaa aag ata	144
50	Asn Glu Glu Asn Gln Lys Ala Leu Asp Lys Asp Gln Val Glu Lys Ile	
	35 40 45	
	aaa ttg aaa atg gca ttt att tgt aca tat gtt cag ctt tct tgt tcc	192
	Lys Leu Lys Met Ala Phe Ile Cys Thr Tyr Val Gln Leu Ser Cys Ser	
	50 55 60	
55	gat ttt gag cag ttt gaa gat ata atg act aga aaa aga caa gag gtt	240
	Asp Phe Glu Gln Phe Glu Asp Ile Met Thr Arg Lys Arg Gln Glu Val	
	65 70 75 80	
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60	Glu Asn Leu Leu Gln Pro Leu Leu Asp Asp Asp Val Phe Thr Ser Leu	
	85 90 95	
	acc agt aat atg gat gac tgt atc agc ttg tat cat cgt tct tat aaa	336
65	Thr Ser Asn Met Asp Asp Cys Ile Ser Leu Tyr His Arg Ser Tyr Lys	
	100 105 110	
	tca gat gcc atc atg atg gat gag caa ttg gac ttc ctc ctc ttg aat	384
	Ser Asp Ala Ile Met Met Asp Glu Gln Leu Asp Phe Leu Leu Leu Asn	

30

	115	120	125	
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10	act caa tat gaa gtt ctt cag aat ata tgt ggc aac ata aga gat ttc Thr Gln Tyr Glu Val Leu Gln Asn Ile Cys Gly Asn Ile Arg Asp Phe 145 150 155 160	480		
15	cat ggg ttg ata gtg aat ggt tgc att aag cat gag atg gtt gag aat His Gly Leu Ile Val Asn Gly Cys Ile Lys His Glu Met Val Glu Asn 165 170 175	528		
20	gtc ttr cct ctg ttt caa ctc atg gct gac aga gta gga cac ttc ctt Val Xaa Pro Leu Phe Gln Leu Met Ala Asp Arg Val Gly His Phe Leu 180 185 190	576		
25	tggt gat gat cag act gat gaa gac tct cga ctc tcc gag cta gat gag Trp Asp Asp Gln Thr Asp Glu Asp Ser Arg Leu Ser Glu Leu Asp Glu 195 200 205	624		
30	gat gaa caa aat gat aga gac tct cga ctt ttc aag cta gca cat cta Asp Glu Gln Asn Asp Arg Asp Ser Arg Leu Phe Lys Leu Ala His Leu 210 215 220	672		
35	ctc ttg aag atc gtt ccg gtt gaa ctg gag gtt ata cac ata tgt tat Leu Leu Lys Ile Val Pro Val Glu Leu Glu Val Ile His Ile Cys Tyr 225 230 235 240	720		
40	aca aac ttg aaa gct tca act tca gct gaa gtt gga ctc ttc att aag Thr Asn Leu Lys Ala Ser Thr Ser Ala Glu Val Gly Leu Phe Ile Lys 245 250 255	768		
45	cag ctt cta gaa acc tct cca gat att ctg agg gaa tat cta att cct Gln Leu Leu Glu Thr Ser Pro Asp Ile Leu Arg Glu Tyr Leu Ile Pro 260 265 270	816		
50	ctg caa gag cac atg gta act gtt att acc cct agc act tca ggg gct Leu Gln Glu His Met Val Thr Val Ile Thr Pro Ser Thr Ser Gly Ala 275 280 285	864		
55	cga aac att cat gtc atg atg gaa ttc cta tta ctt att ctt tct gat Arg Asn Ile His Val Met Met Glu Phe Leu Leu Ile Leu Ser Asp 290 295 300	912		
60	atg ccc aag gac ttt att cat cat gac aaa ctt ttt gat ctc ttg gat Met Pro Lys Asp Phe Ile His His Asp Lys Leu Phe Asp Leu Leu Asp 305 310 315 320	960		
65	cgt gtc gga gta ctt acc agg gag gta tca act ctt gta cgt gac ttg Arg Val Gly Val Leu Thr Arg Glu Val Ser Thr Leu Val Arg Asp Leu 325 330 335	1008		
70	gaa gag gaa cca agg aat aaa gag ggt aat aac caa aca aat tgt gca Glu Glu Glu Pro Arg Asn Lys Glu Gly Asn Asn Gln Thr Asn Cys Ala 340 345 350	1056		
75	acc cta gac ttg ctg gaa aat att gaa ctc ctc aag aaa gat ctc aaa Thr Leu Asp Leu Leu Glu Asn Ile Glu Leu Leu Lys Lys Asp Leu Lys 355 360 365	1104		
80	cat gtt tat ctg aaa gcc ctg gat tca tct caa tgt tgc ttc ccc atg His Val Tyr Leu Lys Ala Leu Asp Ser Ser Gln Cys Cys Phe Pro Met 370 375 380	1152		
85	agt gat gga cca ctc ttc atg cat ctt cta cac ata cac tta aat gat Ser Asp Gly Pro Leu Phe Met His Leu Leu His Ile His Leu Asn Asp 385 390 395	1200		

31

	385	390	395	400	
5	ttg tta gat tct aat gct tat tca att gct ttg ata aag gaa gaa atc Leu Leu Asp Ser Asn Ala Tyr Ser Ile Ala Leu Ile Lys Glu Glu Ile	405	410	415	1248
10	gag ctg gtg aag caa gac ctg aaa ttc ata aga tca ttc ttt gtg gat Glu Leu Val Lys Gln Asp Leu Lys Phe Ile Arg Ser Phe Phe Val Asp	420	425	430	1296
15	gct gag caa gga ttg tat aaa gat ctc tgg gca cgt gtt cta gat gtg Ala Glu Gln Gly Leu Tyr Lys Asp Leu Trp Ala Arg Val Leu Asp Val	435	440	445	1344
20	gct tat gag gca aaa gat gtc ata gat tca att att gtt cga gat aat Ala Tyr Glu Ala Lys Asp Val Ile Asp Ser Ile Ile Val Arg Asp Asn	450	455	460	1392
25	ggc ctc tta cat ctt att ttc tca ctt ccc att acc ata aag aag atc Gly Leu Leu His Leu Ile Phe Ser Leu Pro Ile Thr Ile Lys Lys Ile	465	470	475	1440
30	aaa ctt atc aaa gaa gag atc tct gct tta gat gag aac att ccc aag Lys Leu Ile Lys Glu Glu Ile Ser Ala Leu Asp Glu Asn Ile Pro Lys	485	490	495	1488
35	gac aga ggt cta atc gtt gtg aac tct ccc aag aaa cca gtt gag aga Asp Arg Gly Leu Ile Val Val Asn Ser Pro Lys Lys Pro Val Glu Arg	500	505	510	1536
40	aag tca ttg aca act gat aaa ata act gta ggt ttt gag gag gaa aca Lys Ser Leu Thr Thr Asp Lys Ile Thr Val Gly Phe Glu Glu Glu Thr	515	520	525	1584
45	aac ttg ata ctt aga aag ctc acc agt gga tgc gca gat cta gat gtc Asn Leu Ile Leu Arg Lys Leu Thr Ser Gly Ser Ala Asp Leu Asp Val	530	535	540	1632
50	att tgc atc act ggt atg ccg ggt tca ggt aaa act act ttg gca tac Ile Ser Ile Thr Gly Met Pro Gly Ser Gly Lys Thr Thr Leu Ala Tyr	545	550	555	1680
55	aaa gta tac aat gat aag tca gtt tct agc cgt ttc gac ctt cgt gca Lys Val Tyr Asn Asp Lys Ser Val Ser Ser Arg Phe Asp Leu Arg Ala	565	570	575	1728
60	tgg tgc acg gtc gac caa gga tgt gat gag aag aag ttg ttg aat aca Trp Cys Thr Val Asp Gln Gly Cys Asp Glu Lys Lys Leu Leu Asn Thr	580	585	590	1776
65	att ttc agt caa gtt agt gac tca gat tca aaa ttg agt gag aat att Ile Phe Ser Gln Val Ser Asp Ser Asp Ser Lys Leu Ser Glu Asn Ile	595	600	605	1824
70	gat gtt gct gat aaa tta cgg aaa caa ctg ttt gga aag agg tat ctt Asp Val Ala Asp Lys Leu Arg Lys Gln Leu Phe Gly Lys Arg Tyr Leu	610	615	620	1872
75	att gtc tta gat gac gtg tgg gat act act aca tgg gat gag tta aca Ile Val Leu Asp Asp Val Trp Asp Thr Thr Thr Trp Asp Glu Leu Thr	625	630	635	1920
80	aga cct ttt cct gaa tct aag aaa gga agt agg att att ttg aca act Arg Pro Phe Pro Glu Ser Lys Lys Gly Ser Arg Ile Ile Leu Thr Thr	645	650	655	1968
85	cgg gaa aag gaa gtg gct ttg cat gga aag ctg aac act gat cct ctt Arg Glu Lys Glu Val Ala Leu His Gly Lys Leu Asn Thr Asp Pro Leu				2016

	660	665	670	
5	gac ctt cga ttg cta aga cca gat gaa agt tgg gaa cta tta gag aaa Asp Leu Arg Leu Leu Arg Pro Asp Glu Ser Trp Glu Leu Leu Glu Lys 675 680 685	2064		
10	agg gca ttt ggg aat gag agt tgc cct gat gaa cta tta gat gtc ggt Arg Ala Phe Gly Asn Glu Ser Cys Pro Asp Glu Leu Leu Asp Val Gly 690 695 700	2112		
15	aaa gaa ata gcc gaa aat tgt aaa ggg ctt cct ttg gtg gct gat ctg Lys Glu Ile Ala Glu Asn Cys Lys Gly Leu Pro Leu Val Ala Asp Leu 705 710 715 720	2160		
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25	gaa gtt caa agt agt ttg agt tct ttt att ttg aac agt gaa gtg gaa Glu Val Gln Ser Ser Leu Ser Ser Phe Ile Leu Asn Ser Glu Val Glu 740 745 750	2256		
30	gtg atg aaa gtt ata gaa tta agt tat gac cat tta cca cat cac ctc Val Met Lys Val Ile Glu Leu Ser Tyr Asp His Leu Pro His His Leu 755 760 765	2304		
35	aag cca tgc ttg ctg tat ttt gca agt ttt ccg aag gac act tca ttg Lys Pro Cys Leu Leu Tyr Phe Ala Ser Phe Pro Lys Asp Thr Ser Leu 770 775 780	2352		
40	aca atc tat gag ttg aat gtt tat ttc ggt gct gaa gga ttt gtg gga Thr Ile Tyr Glu Leu Asn Val Tyr Phe Gly Ala Glu Gly Phe Val Gly 785 790 795 800	2400		
45	aag acg gag atg aac agt atg gaa gaa gtg gtg aag att tat atg gat Lys Thr Glu Met Asn Ser Met Glu Glu Val Val Lys Ile Tyr Met Asp 805 810 815	2448		
50	gat tta att tac agt agc ttg gta att tgt ttc aat gag ata ggt tat Asp Leu Ile Tyr Ser Ser Leu Val Ile Cys Phe Asn Glu Ile Gly Tyr 820 825 830	2496		
55	gca ctg aat ttc caa att cat gat ctt gtg cat gac ttt tgt ttg ata Ala Leu Asn Phe Gln Ile His Asp Leu Val His Asp Phe Cys Leu Ile 835 840 845	2544		
60	aaa gca aga aag gaa aat ttg ttt gat cag ata aga tca agt gct cca Lys Ala Arg Lys Glu Asn Leu Phe Asp Gln Ile Arg Ser Ser Ala Pro 850 855 860	2592		
65	tca gat ttg ttg cct cgt caa att acc att gat tgt gat gag gag gag Ser Asp Leu Leu Pro Arg Gln Ile Thr Ile Asp Cys Asp Glu Glu Glu 865 870 875 880	2640		
70	cac ttt ggg ctt aat ttt gtc atg ttc gat tca aat aag aaa agg cat His Phe Gly Leu Asn Phe Val Met Phe Asp Ser Asn Lys Lys Arg His 885 890 895	2688		
75	tct ggt aaa cac ctc tat tct ttg agg ata att gga gac cag ctg gat Ser Gly Lys His Leu Tyr Ser Leu Arg Ile Ile Gly Asp Gln Leu Asp 900 905 910	2736		
80	gac agt gtt tct gat gca ttt cac cta aga cac ttg agg ctt ctt aga Asp Ser Val Ser Asp Ala Phe His Leu Arg His Leu Arg Leu Leu Arg 915 920 925	2784		
85	gtg ttg gac ctg cat acg tct ttt atc atg gtg aaa gat tct ttg ctg Val Leu Asp Leu His Thr Ser Phe Ile Met Val Lys Asp Ser Leu Leu	2832		

	930	935	940	
5	aat gaa ata tgc atg ttg aat cat ttg agg tac tta tcc att gac aca Asn Glu Ile Cys Met Leu Asn His Leu Arg Tyr Leu Ser Ile Asp Thr 945 950 955 960	2880		
10	caa gtt aaa tat ctg cct ttg tct ttc tca aac ctc tgg aat cta gaa Gln Val Lys Tyr Leu Pro Leu Ser Phe Ser Asn Leu Trp Asn Leu Glu 965 970 975	2928		
15	agc ctg ttt gtg tct acc aac aga tca atc ttg gta cta tta ccg aga Ser Leu Phe Val Ser Thr Asn Arg Ser Ile Leu Val Leu Leu Pro Arg 980 985 990	2976		
20	att ttg gat ctt gta aag ttg cga gtg ctg tcc gtg gat gct tgt tct Ile Leu Asp Leu Val Lys Leu Arg Val Leu Ser Val Asp Ala Cys Ser 995 1000 1005	3024		
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30	aca aag tta gag aac ttg aga ata tta acg gaa ctg ttg att tcc Thr Lys Leu Glu Asn Leu Arg Ile Leu Thr Glu Leu Leu Ile Ser 1025 1030 1035	3114		
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40	cag ttg ctt tca ttt gaa ctc aag gag tca tgg gat tat tca aca Gln Leu Leu Ser Phe Glu Leu Lys Glu Ser Trp Asp Tyr Ser Thr 1055 1060 1065	3204		
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65	tca cta tca aca ata gcg aga ctg ccc aac ctt gaa gag ttg tcc Ser Leu Ser Thr Ile Ala Arg Leu Pro Asn Leu Glu Glu Leu Ser 1130 1135 1140	3429		
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75	gaa gac acc ttt gag aat ctc aaa ttt ttg aac ttc aat caa gtt Glu Asp Thr Phe Glu Asn Leu Lys Phe Leu Asn Phe Asn Gln Val 1160 1165 1170	3519		
80	agt att tcc aag tgg gag gtt gga gag gaa tcc ttc ccc aat ctt Ser Ile Ser Lys Trp Glu Val Gly Glu Glu Ser Phe Pro Asn Leu 1175 1180 1185	3564		
85	gag aaa tta aaa ctg cgg gga tgt cat aag cta gag gag att cca Glu Lys Leu Lys Leu Arg Gly Cys His Lys Leu Glu Glu Ile Pro 1190 1195 1200	3609		

34

	1190	1195	1200	
5	cct agt ttt gga gat att tat Pro Ser Phe Gly Asp Ile Tyr 1205	tca ttg aaa tct atc Ser Leu Lys Ser Ile 1210	aaa att gta Lys Ile Val 1215	3654
10	aag agt cct caa ctt gaa gat Lys Ser Pro Gln Leu Glu Asp 1220	tct gct ctc aaa att Ser Ala Leu Lys Ile 1225	aag gaa tac Lys Glu Tyr 1230	3699
15	gct gaa gat atg agg gga ggg Ala Glu Asp Met Arg Gly 1235	gac gag ctt cag atc Asp Glu Leu Gln Ile 1240	ctt ggc caa Leu Gly Gln 1245	3744
20	aag aat atc ccc tta ttt aag tag Lys Asn Ile Pro Leu Phe Lys 1250			3768
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50	Asn Glu Glu Asn Gln Lys Ala Leu Asp Lys Asp Gln Val Glu Lys Ile 35 40 45			
55	Lys Leu Lys Met Ala Phe Ile Cys Thr Tyr Val Gln Leu Ser Cys Ser 50 55 60			
60	Asp Phe Glu Gln Phe Glu Asp Ile Met Thr Arg Lys Arg Gln Glu Val 65 70 75 80			
65	Glu Asn Leu Leu Gln Pro Leu Leu Asp Asp Asp Val Phe Thr Ser Leu 85 90 95			
	Thr Ser Asn Met Asp Asp Cys Ile Ser Leu Tyr His Arg Ser Tyr Lys 100 105 110			
	Ser Asp Ala Ile Met Met Asp Glu Gln Leu Asp Phe Leu Leu Leu Asn			

35

	115	120	125
5	Leu Tyr His Leu Ser Lys His His Ala Glu Lys Ile Phe Pro Gly Val 130 135 140		
10	Thr Gln Tyr Glu Val Leu Gln Asn Ile Cys Gly Asn Ile Arg Asp Phe 145 150 155 160		
15	His Gly Leu Ile Val Asn Gly Cys Ile Lys His Glu Met Val Glu Asn 165 170 175		
20	Val Xaa Pro Leu Phe Gln Leu Met Ala Asp Arg Val Gly His Phe Leu 180 185 190		
25	Trp Asp Asp Gln Thr Asp Glu Asp Ser Arg Leu Ser Glu Leu Asp Glu 195 200 205		
30	Asp Glu Gln Asn Asp Arg Asp Ser Arg Leu Phe Lys Leu Ala His Leu 210 215 220		
35	Leu Leu Lys Ile Val Pro Val Glu Leu Glu Val Ile His Ile Cys Tyr 225 230 235 240		
40	Thr Asn Leu Lys Ala Ser Thr Ser Ala Glu Val Gly Leu Phe Ile Lys 245 250 255		
45	Gln Leu Leu Glu Thr Ser Pro Asp Ile Leu Arg Glu Tyr Leu Ile Pro 260 265 270		
50	Leu Gln Glu His Met Val Thr Val Ile Thr Pro Ser Thr Ser Gly Ala 275 280 285		
55	Arg Asn Ile His Val Met Met Glu Phe Leu Leu Leu Ile Leu Ser Asp 290 295 300		
60	Met Pro Lys Asp Phe Ile His His Asp Lys Leu Phe Asp Leu Leu Asp 305 310 315 320		
65	Arg Val Gly Val Leu Thr Arg Glu Val Ser Thr Leu Val Arg Asp Leu 325 330 335		
70	Glu Glu Glu Pro Arg Asn Lys Glu Gly Asn Asn Gln Thr Asn Cys Ala 340 345 350		
75	Thr Leu Asp Leu Leu Glu Asn Ile Glu Leu Leu Lys Lys Asp Leu Lys 355 360 365		
80	His Val Tyr Leu Lys Ala Leu Asp Ser Ser Gln Cys Cys Phe Pro Met 370 375 380		
85	Ser Asp Gly Pro Leu Phe Met His Leu Leu His Ile His Leu Asn Asp		

	385		390		395		400									
5	Leu	Leu	Asp	Ser	Asn	Ala	Tyr	Ser	Ile	Ala	Leu	Ile	Lys	Glu	Glu	Ile
					405					410						415
10	Glu	Leu	Val	Lys	Gln	Asp	Leu	Lys	Phe	Ile	Arg	Ser	Phe	Phe	Val	Asp
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15	Ala	Glu	Gln	Gly	Leu	Tyr	Lys	Asp	Leu	Trp	Ala	Arg	Val	Leu	Asp	Val
			435					440						445		
20	Ala	Tyr	Glu	Ala	Lys	Asp	Val	Ile	Asp	Ser	Ile	Ile	Val	Arg	Asp	Asn
		450					455						460			
25	Gly	Leu	Leu	His	Leu	Ile	Phe	Ser	Leu	Pro	Ile	Thr	Ile	Lys	Lys	Ile
	465					470					475					480
30	Lys	Leu	Ile	Lys	Glu	Glu	Ile	Ser	Ala	Leu	Asp	Glu	Asn	Ile	Pro	Lys
					485					490					495	
35	Asp	Arg	Gly	Leu	Ile	Val	Val	Asn	Ser	Pro	Lys	Lys	Pro	Val	Glu	Arg
				500						505					510	
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			515					520					525			
45	Asn	Leu	Ile	Leu	Arg	Lys	Leu	Thr	Ser	Gly	Ser	Ala	Asp	Leu	Asp	Val
		530					535					540				
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	545					550					555					560
55	Lys	Val	Tyr	Asn	Asp	Lys	Ser	Val	Ser	Ser	Arg	Phe	Asp	Leu	Arg	Ala
				565						570					575	
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				580					585					590		
65	Ile	Phe	Ser	Gln	Val	Ser	Asp	Ser	Asp	Ser	Lys	Leu	Ser	Glu	Asn	Ile
			595					600					605			
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		610					615					620				
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	625					630					635					640
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				645						650					655	
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660

665

670

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70 His Phe Gly Leu Asn Phe Val Met Phe Asp Ser Asn Lys Lys Arg His
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 915 920 925

Val Leu Asp Leu His Thr Ser Phe Ile Met Val Lys Asp Ser Leu Leu

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50	aat gag gaa aat caa aaa gct ctt gac aaa gat caa gtt gaa aag cta Asn Glu Glu Asn Gln Lys Ala Leu Asp Lys Asp Gln Val Glu Lys Leu 35 40 45			144
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60	gat ttt gag cag ttt gaa gat ata atg act aga aat aga caa gag gtt Asp Phe Glu Gln Phe Glu Asp Ile Met Thr Arg Asn Arg Gln Glu Val 65 70 75 80			240
65	gag aat ctg ctt caa tca ctt ttg gat gat gat gtc ctt act agc ctc Glu Asn Leu Leu Ser Leu Leu Asp Asp Asp Val Leu Thr Ser Leu 85 90 95			288
65	acc agt aat atg gat gac tgt atc agc ttg tat cat cgt tct tat aaa Thr Ser Asn Met Asp Asp Cys Ile Ser Leu Tyr His Arg Ser Tyr Lys 100 105 110			336

40

	tca gat gcc atc atg atg gat gag caa ttg gac ttc ctc ctc ttg aat	384
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	115 120 125	
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	Leu Tyr His Leu Ser Lys His His Ala Glu Lys Ile Phe Pro Gly Val	
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	Thr Gln Tyr Glu Val Leu Gln Asn Val Cys Gly Asn Ile Arg Asp Phe	
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20	gtc tta cct ctg ttt caa ctc atg gct gaa aga gta gga cac ttc ctt	576
	Val Leu Pro Leu Phe Gln Leu Met Ala Glu Arg Val Gly His Phe Leu	
	180 185 190	
25	tgg gag gat cag act gat gaa gac tct cgg ctc tcc gag cta gat gag	624
	Trp Glu Asp Gln Thr Asp Glu Asp Ser Arg Leu Ser Glu Leu Asp Glu	
	195 200 205	
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	Asp Glu His Asn Asp Arg Asp Ser Arg Leu Phe Gln Leu Thr His Leu	
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	Leu Leu Lys Ile Val Pro Thr Glu Leu Glu Val Met His Ile Cys Tyr	
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	Thr Asn Leu Lys Ala Ser Thr Ser Ala Glu Val Gly Arg Phe Ile Lys	
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	Lys Leu Leu Glu Thr Ser Pro Asp Ile Leu Arg Glu Tyr Ile Ile Gln	
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	Leu Gln Glu His Met Leu Thr Val Ile Pro Pro Ser Thr Leu Gly Ala	
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	Arg Asn Ile His Val Met Met Glu Phe Leu Leu Leu Ile Leu Ser Asp	
	290 295 300	
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	Met Pro Lys Asp Phe Ile His His Asp Lys Leu Phe Asp Leu Leu Ala	
	305 310 315 320	
65	cat gtt gga aca ctt acc agg gag gta tcg act ctt gta cgt gac ttg	1008
	His Val Gly Thr Leu Thr Arg Glu Val Ser Thr Leu Val Arg Asp Leu	
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	Glu Glu Lys Leu Arg Asn Lys Glu Gly Asn Asn Gln Thr Asn Cys Ala	
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75	acc cta gac ttg ctg gaa aat att gaa ctc ctc aag aaa gat ctc aaa	1104
	Thr Leu Asp Leu Leu Glu Asn Ile Glu Leu Leu Lys Lys Asp Leu Lys	
	355 360 365	
80	cat gtt tat ctg aaa gcc cca aat tca tct caa tgt tgc ttc ccc atg	1152
	His Val Tyr Leu Lys Ala Pro Asn Ser Ser Gln Cys Cys Phe Pro Met	
	370 375 380	

41

	agt gat gga cca ctc ttc atg cat ctt cta cac atg cac tta aat gat	1200
	Ser Asp Gly Pro Leu Phe Met His Leu Leu His Met His Leu Asn Asp	
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	Leu Leu Asp Ser Asn Ala Tyr Ser Ile Ser Leu Ile Lys Glu Glu Ile	
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	Glu Leu Val Ser Gln Glu Leu Glu Phe Ile Arg Ser Phe Phe Gly Asp	
	420 425 430	
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	Ala Ala Glu Gln Gly Leu Tyr Lys Asp Ile Trp Ala Arg Val Leu Asp	
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	Val Ala Tyr Glu Ala Lys Asp Val Ile Asp Ser Ile Ile Val Arg Asp	
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	Asn Gly Leu Leu His Leu Ile Phe Ser Leu Pro Ile Thr Ile Lys Lys	
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	Ile Lys Leu Ile Lys Glu Glu Ile Ser Ala Leu Asp Glu Asn Ile Pro	
	485 490 495	
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	Lys Asp Arg Gly Leu Ile Val Val Asn Ser Pro Lys Lys Pro Val Glu	
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	Tyr Lys Val Tyr Asn Asp Lys Ser Val Ser Arg His Phe Asp Leu Arg	
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	Ala Trp Cys Thr Val Asp Gln Gly Tyr Asp Asp Lys Lys Leu Leu Asp	
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	Ile Asp Val Ala Asp Lys Leu Arg Lys Gln Leu Phe Gly Lys Arg Tyr	
	610 615 620	
75	ctt att gtc tta gat gat gtg tgg gat act act aca ttg gat gag ttg	1920
	Leu Ile Val Leu Asp Asp Val Trp Asp Thr Thr Leu Asp Glu Leu	
	625 630 635 640	
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42

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	Gly Lys Glu Ile Ala Glu Asn Cys Lys Gly Leu Pro Leu Val Ala Asp	
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	Leu Glu Val Gln Ser Ser Leu Ser Ser Phe Ile Leu Asn Ser Glu Val	
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	Asp Asp Leu Ile Ser Ser Ser Leu Val Ile Cys Phe Asn Glu Ile Gly	
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	Asp Ile Leu Asn Phe Gln Ile His Asp Leu Val His Asp Phe Cys Leu	
	835 840 845	
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	Ile Lys Ala Arg Lys Glu Asn Leu Phe Asp Arg Ile Arg Ser Ser Ala	
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	Pro Ser Asp Leu Leu Pro Arg Gln Ile Thr Ile Asp Tyr Asp Glu Glu	
	865 870 875 880	
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5 His Gly Leu Ile Leu Asn Gly Cys Ile Lys His Glu Met Val Glu Asn
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10 Val Leu Pro Leu Phe Gln Leu Met Ala Glu Arg Val Gly His Phe Leu
 180 185 190

15 Trp Glu Asp Gln Thr Asp Glu Asp Ser Arg Leu Ser Glu Leu Asp Glu
 195 200 205

20 Asp Glu His Asn Asp Arg Asp Ser Arg Leu Phe Gln Leu Thr His Leu
 210 215 220

Leu Leu Lys Ile Val Pro Thr Glu Leu Glu Val Met His Ile Cys Tyr
 225 230 235 240

25 Thr Asn Leu Lys Ala Ser Thr Ser Ala Glu Val Gly Arg Phe Ile Lys
 245 250 255

30 Lys Leu Leu Glu Thr Ser Pro Asp Ile Leu Arg Glu Tyr Ile Ile Gln
 260 265 270

35 Leu Gln Glu His Met Leu Thr Val Ile Pro Pro Ser Thr Leu Gly Ala
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	1 5 10 15		
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	Leu Lys Gly Glu Leu Val Leu Leu Phe Gly Phe Gln Asp Glu Phe Gln		
	20 25 30		
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	35 40 45		
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	50 55 60		
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82

	885	890	895	
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10	Ile Val Lys Ile Leu Ile Asn Asn Val Ser Asp Ala Gln His Leu Ser				
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20	Gln Met Val Phe Asn Asp Gln Arg Val Thr Glu His Phe His Ser Lys				
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25	Ile Trp Ile Cys Val Ser Glu Asp Phe Asp Glu Lys Arg Leu Ile Lys				
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60	Phe Met Gln Arg Ala Phe Gly His Gln Glu Glu Ile Asn Pro Asn Leu				
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65	Val Ala Ile Gly Lys Glu Ile Val Lys Lys Ser Gly Gly Val Pro Leu				
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70	Ala Ala Lys Thr Leu Gly Gly Ile Leu Cys Phe Lys Arg Glu Glu Arg				
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75	Ala Trp Glu His Val Arg Asp Ser Pro Ile Trp Asn Leu Pro Gln Asp				
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80	Glu Ser Ser Ile Leu Pro Ala Leu Arg Leu Ser Tyr His Gln Leu Pro				
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65	Leu Thr Cys Met Pro Pro Arg Ile Gly Ser Leu Thr Cys Leu Lys Thr 610 615 620		
70	Leu Gly Gln Phe Val Val Gly Arg Lys Lys Gly Tyr Gln Leu Gly Glu 625 630 635 640		
75	Leu Gly Asn Leu Asn Leu Tyr Gly Ser Ile Lys Ile Ser His Leu Glu 645 650 655		
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85	Gly Asn Leu His Ser Leu Ser Met Ser Trp Asn Asn Phe Gly Pro His		

	675	680	685
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15	Ile Ser Asn Phe Arg Asn Cys Ser Cys Leu Pro Pro Phe Gly Asp Leu 740 745 750		
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945

950

955

960

5 Ser His Ile Pro Asn Val Asn Ile Tyr Ile
965 970

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